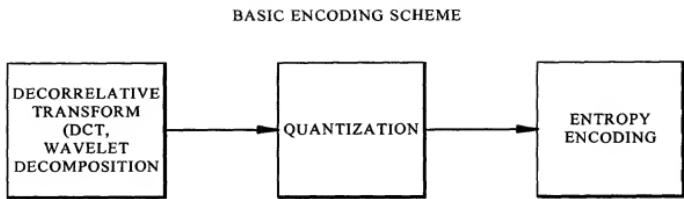


FIG.1



FREQUENCY ALLOCATION AFTER THE FIRST LEVEL OF TRANSFORM

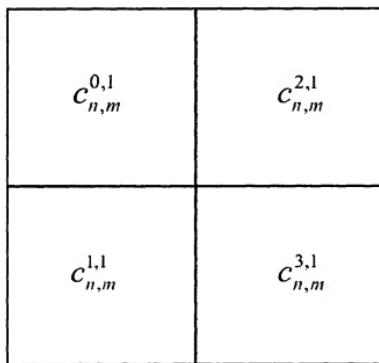


FIG.2

PSNR VALUES FOR PICTURES RESTORED AFTER  
COMPRESSING BY JPEG 2000 AND GIVEN METHOD

PICTURE QCIF	COMPRESSION RATIO	PSNR (Db)	
		JPEG2000 (LURA WAVE COMPANY)	GIVEN METHOD
		RGB	RGB
FOREMAN 1	29,1	27,62	29,94
FOREMAN 2	26,7	26,65	28,85
HORSE	34,26	28,86	29,99

FIG.3

PSNR VALUES FOR PICTURES RESTORED AFTER  
COMPRESSING BY JPEG 2000 AND GIVEN METHOD

PICTURE SIF	COMPRESSION RATIO	PSNR (Db)	
		JPEG2000 (LURA WAVE COMPANY)	GIVEN METHOD
		RGB	RGB
BOAT	49.34	30.5	30.54
DANCE	46.35	27.24	27.27
HORSE	50.12	33.44	33.49

FIG.5

Visual quality for pictures restored after compressing by  
JPEG2000 and given method.

Compression ratio is the same

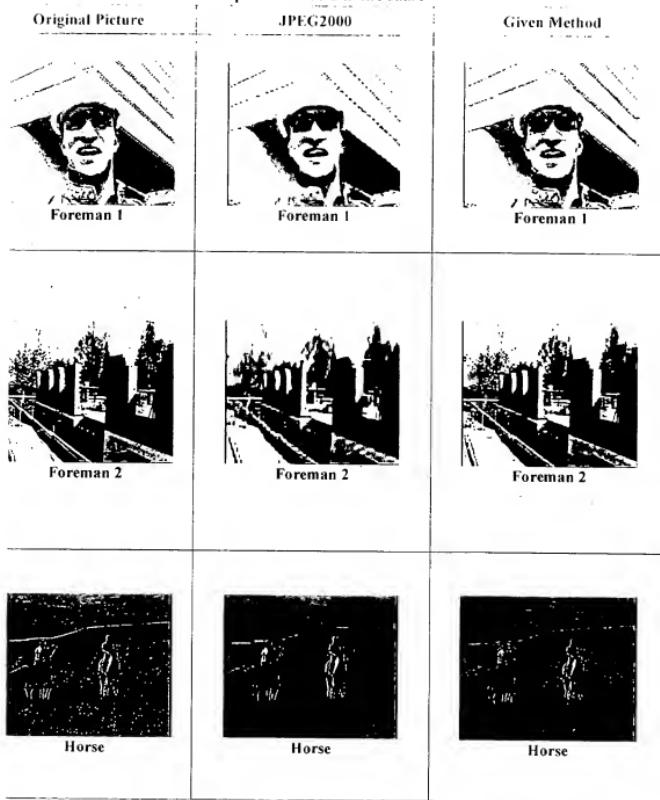


FIG.4

**FIG.6**

Visual quality for pictures restored after compressing by  
JPEG2000 and given method.

Compression ratio is the same

Original Picture - Boat



JPEG2000



Given Method



Visual quality for pictures restored after compressing by  
JPEG2000 and given method.

FIG.7

Compression ratio is the same

Original Picture - Dance



JPEG2000



Given Method



Visual quality for pictures restored after compressing by  
JPEG2000 and given method.

FIG.8

Compression ratio is the same

Original Picture - Horse



JPEG2000



Given Method



FIG.9A

Filtering coefficients for the first level of wavelet decomposition.

$$k_{i,j} \quad (i,j = 0,1,\dots,20)$$

Column i	1	2	3	4	5	6	7	8	9	10	11	12
Row j												
1	0.0000002	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
2	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	-0.00000010	-0.00000001	0.00000001	-0.00000001	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
4	0.00000000	-0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000053	0.00000004	-0.00000005	0.00000005	-0.00000005	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
6	-0.00000001	0.00000003	-0.00000003	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	-0.00000077	-0.0000002	0.0000002	-0.00000019	-0.00000021	0.00000000	-0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
8	0.00000051	-0.00000009	0.00000009	0.00000005	0.00000005	0.00000000	-0.00000001	0.00000001	0.00000000	0.00000000	0.00000000	0.00000000
9	0.00000086	0.00000016	-0.00000016	0.00000081	0.00000081	0.00000010	-0.00000013	-0.00000031	0.00000001	0.00000007	-0.00000061	-0.00000002
10	0.00000078	0.00000087	-0.00000087	-0.00000076	0.00000076	0.00000076	0.00000006	-0.00000006	-0.00000006	0.00000000	-0.00000001	0.00000000
11	-0.00000784	-0.00000054	0.00000054	-0.00000051	0.00000051	-0.00000048	-0.00000048	0.00000046	0.00000061	0.00000010	-0.00000003	0.00000004
12	0.00000029	-0.000000518	0.00000074	-0.00000004	-0.00000014	-0.00000014	-0.00000014	0.00000000	0.00000000	-0.00000016	0.00000000	0.00000004
13	0.00004179	0.00000005	-0.00002944	0.00001573	0.00001730	-0.0000283	-0.0000579	0.00000178	0.00000016	-0.00000094	0.00000009	0.00000003
14	-0.00001631	0.00000010	-0.00000046	-0.00000001	-0.00000042	0.00000014	0.00000000	-0.00000040	0.00000018	0.00000008	-0.00000003	-0.00000002
15	-0.00193295	-0.00026852	0.00025435	-0.00005571	-0.00005571	0.00000880	0.00000624	0.00000624	-0.00000529	0.00000047	0.00000130	-0.00000008
16	-0.00095144	-0.000151289	0.000151289	-0.00002853	-0.00002853	0.0000153	0.00000989	0.00000989	-0.00000263	-0.00000014	0.00000061	0.00000003
17	0.01584475	0.00098192	-0.00054612	0.00020812	0.00035986	-0.00000370	-0.00000657	0.00000000	0.00000000	0.000000134	-0.000000042	0.00000036
18	-0.00004332	0.00138103	-0.00126582	-0.00002280	0.00020612	-0.0000283	-0.00005571	-0.00000001	0.00001573	-0.00000004	-0.000000348	-0.00000005
19	-0.074929	-0.00621967	0.0055394	-0.00125852	-0.00056172	0.00011269	0.00025435	-0.00000448	0.000002944	-0.00000051	-0.000000078	0.00000000
20	0.08046033	0.00661841	-0.00021967	0.00136102	0.00056192	-0.00018141	0.00026852	0.00000019	0.00000019	-0.000000544	0.000000067	0.00000000
21	0.4736738	0.08046033	-0.0774929	-0.00304332	0.01564475	-0.00085144	-0.00193295	-0.00016031	0.00041019	0.00000399	-0.00003784	0.00000178

FIG.9B

Filtering coefficients for the first level of wavelet decomposition.

Column Row	13	14	15	16	17	18	19	20	21
1	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
4	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
6	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
8	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
9	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
10	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
11	-0.00000002	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
12	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
13	0.00000006	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
14	0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
15	-0.00000026	0.00000000	0.00000005	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000
16	-0.00000011	-0.00000001	0.00000003	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000
17	0.00000086	0.00000000	-0.00000018	0.00000001	0.00000004	0.00000000	-0.00000001	0.00000000	0.00000000
18	0.00000070	0.00000034	-0.00000016	0.00000000	0.00000003	0.00000000	-0.00000001	0.00000000	0.00000000
19	-0.00000124	0.00000036	-0.00000017	0.00000003	-0.00000004	0.00000000	0.00000001	0.00000000	0.00000000
20	0.00000121	-0.00000008	0.00000017	0.00000003	0.00000000	0.00000001	0.00000000	0.00000000	0.00000000
21	0.000001204	0.00000062	-0.00000233	0.00000000	0.00000044	0.00000000	-0.00000008	0.00000000	0.00000002

# FIG.10A

Filtering coefficients for the second level of wavelet decomposition.

$$h_{i,j}^1 \quad (i, j = 0, 1, \dots, 20)$$

Column Row	1	2	3	4	5	6	7	8	9	10	11	12
1	0.00000002	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3	-0.00000009	-0.00000001	-0.00000001	-0.00000001	-0.00000001	-0.00000000	-0.00000000	-0.00000000	-0.00000000	-0.00000000	-0.00000000	-0.00000000
4	-0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000046	0.00000033	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034	0.00000034
6	0.00000000	0.00000003	-0.00000003	0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	-0.00000241	-0.00000118	0.00000119	-0.00000117	-0.00000118	0.00000118	-0.00000118	0.00000118	-0.00000118	0.00000118	-0.00000118	0.00000118
8	0.00000051	-0.00000068	0.00000078	0.00000004	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
9	0.000001237	0.00000123	-0.00000123	0.00000072	0.00000099	-0.00000111	0.00000099	-0.00000111	0.00000099	-0.00000111	0.00000099	-0.00000111
10	0.00000187	0.00000079	-0.00000079	0.00000072	0.00000004	0.00000003	0.00000003	-0.00000005	-0.00000005	-0.00000001	0.00000000	0.00000000
11	-0.00000793	0.00000463	0.00000462	-0.00000317	-0.00000317	-0.00000317	-0.00000317	-0.00000317	-0.00000317	-0.00000317	-0.00000317	-0.00000317
12	0.00000180	-0.00000495	0.00000495	-0.00000114	-0.00000114	-0.00000114	-0.00000114	-0.00000114	-0.00000114	-0.00000114	-0.00000114	-0.00000114
13	0.00003885	0.00002709	-0.00002709	0.00001475	0.00001475	-0.00001475	0.00001475	-0.00001475	0.00001475	-0.00001475	0.00001475	-0.00001475
14	-0.00010234	0.00002958	-0.00002958	0.00000401	0.00000688	-0.00000688	0.00000688	-0.00000688	0.00000688	-0.00000688	0.00000688	-0.00000688
15	-0.00184548	-0.00029588	0.00029588	0.00024484	-0.00005249	-0.00005249	-0.00005249	-0.00005249	-0.00005249	-0.00005249	-0.00005249	-0.00005249
16	-0.0069787	-0.00101240	0.00101240	0.00000267	-0.00000267	-0.00000267	-0.00000267	-0.00000267	-0.00000267	-0.00000267	-0.00000267	-0.00000267
17	0.01584572	0.00059134	-0.00048592	0.00019844	0.00004831	-0.00004831	0.00004831	-0.00004831	0.00004831	-0.00004831	0.00004831	-0.00004831
18	-0.0028156	0.00131753	-0.00131753	0.0019844	-0.00000264	-0.00000264	-0.00000264	-0.00000264	-0.00000264	-0.00000264	-0.00000264	-0.00000264
19	-0.0733850	-0.00620288	0.00620288	0.00565612	0.00012885	-0.00046585	0.00012584	0.00024484	-0.00015231	-0.00000482	-0.00000482	-0.00000482
20	0.0862776	0.00540699	-0.00060238	0.000157763	0.00059814	-0.00059814	0.00059814	-0.00059814	0.00059814	-0.00059814	0.00059814	-0.00059814
21	0.47382556	0.06023786	-0.07733850	-0.00268156	0.01534378	-0.00097797	-0.00145456	-0.00097797	-0.00145456	0.00003895	0.00003895	-0.00000160

**FIG. 10B**

Filtering coefficients for the second level of wavelet decomposition.

Row \ Column	13	14	15	16	17	18	19	20	21
Row	1	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
4	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
6	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
8	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
9	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
10	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
11	-0.0000002	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
12	-0.0000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
13	0.0000006	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
14	0.0000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
15	-0.0000027	0.00000000	0.00000006	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000
16	-0.00000011	-0.00000001	0.00000003	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000
17	0.00000089	0.00000000	-0.00000018	0.00000001	0.00000004	0.00000000	-0.00000001	0.00000000	0.00000000
18	0.00000072	0.00000004	-0.00000017	0.00000000	0.00000004	0.00000000	-0.00000001	0.00000000	0.00000000
19	-0.00000128	0.00000008	0.00000019	-0.00000003	0.00000004	0.00000000	0.00000001	0.00000000	0.00000000
20	0.00000123	-0.00000008	-0.00000018	0.00000003	0.00000003	0.00000000	-0.00000001	0.00000000	0.00000000
21	0.00001237	0.00000051	-0.00000241	0.00000000	0.00000046	0.00000000	-0.00000009	0.00000000	0.00000002

FIG.11A

Filtering coefficients for the third level of wavelet decomposition.

$$h_{i,j}^2 \quad (i,j = 0,1,\dots,20)$$

Column i	1	2	3	4	5	6	7	8	9	10	11	12
Row j	1	2	3	4	5	6	7	8	9	10	11	12
1	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3	-0.00000008	-0.00000001	0.00000001	-0.00000001	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
4	0.00000000	-0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000044	0.00000003	-0.00000004	0.00000003	0.00000004	-0.00000001	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
6	0.00000003	0.00000013	-0.00000013	0.00000009	0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	-0.00000033	-0.00000018	0.00000018	-0.00000016	-0.00000018	0.00000003	0.00000005	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000
8	0.00000069	-0.00000008	0.00000008	0.00000004	0.00000002	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
9	0.00000124	0.00000121	-0.00000124	0.00000119	0.00000119	-0.00000111	-0.00000105	0.00000101	-0.00000101	0.00000101	-0.00000101	0.00000101
10	0.00000198	0.00000178	-0.00000070	0.00000094	0.00000073	-0.00000063	-0.00000065	0.00000065	-0.00000065	0.00000065	0.00000065	0.00000065
11	-0.00000646	-0.00000140	0.00000140	-0.00000098	-0.00000095	0.00000082	0.00000112	-0.00000203	-0.00000204	0.00000204	0.00000207	0.00000209
12	0.00000148	-0.00000469	0.00000469	-0.00000115	-0.00000112	0.00000044	0.00000047	-0.00000114	-0.00000114	0.00000114	0.00000114	0.00000114
13	0.00000487	0.00000288	-0.00000284	0.00000148	0.00000153	-0.00000206	-0.00000206	0.00000151	0.00000151	-0.00000151	0.00000151	0.00000151
14	-0.00001631	0.00000456	-0.00000391	-0.00000356	-0.00000275	0.00000162	0.00000161	-0.00000166	-0.00000166	0.00000166	0.00000167	0.00000167
15	-0.0018269	-0.00156712	0.000004232	-0.00000590	-0.00000819	0.00000785	0.00000785	-0.00000785	-0.00000785	0.00000785	0.00000785	0.00000785
16	-0.00169460	-0.00148945	0.0013401	-0.00000358	-0.00000446	0.00000128	0.00000128	-0.00000128	-0.00000128	0.00000128	0.00000128	0.00000128
17	0.01129107	0.00958194	-0.000004643	0.00018914	0.00004524	-0.00005140	-0.00005140	0.00005154	-0.00005154	0.00005154	-0.00005154	0.00005154
18	-0.00263005	0.0138132	-0.00128472	0.00000432	0.0001874	-0.00002528	-0.00002528	0.00002554	-0.00002554	0.00002554	-0.00002554	0.00002554
19	0.01727922	-0.00697168	0.00617401	0.000004232	0.000128132	-0.00004165	-0.00004165	0.00004545	-0.00004545	0.00004545	-0.00004545	0.00004545
20	0.08617853	0.0045153	-0.00567198	0.00138132	0.00056164	-0.00004860	-0.00004860	0.00004860	-0.00004860	0.00004860	-0.00004860	0.00004860
21	0.47386420	0.0017853	-0.0772622	-0.00263096	0.0129017	-0.0000460	-0.0000460	0.0000460	-0.0000460	0.0000460	-0.0000460	0.0000460

FIG. 11B

Filtering coefficients for the third level of wavelet decomposition.

Column Row	13	14	15	16	17	18	19	20	21
1	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
3	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
4	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
5	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
6	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
7	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
8	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
9	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
10	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
11	-0.00000002	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
12	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
13	0.00000006	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
14	0.00000001	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
15	-0.00000026	0.00000000	0.00000000	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000
16	-0.00000011	-0.00000001	0.00000000	0.00000000	-0.00000001	0.00000000	0.00000000	0.00000000	0.00000000
17	0.00000086	0.00000000	-0.00000018	0.00000001	0.00000004	0.00000000	0.00000000	0.00000000	0.00000000
18	0.00000070	0.00000004	-0.00000016	0.00000003	0.00000003	0.00000000	-0.00000001	0.00000000	0.00000000
19	-0.00000124	0.00000008	0.00000018	-0.00000003	-0.00000004	0.00000000	0.00000001	0.00000000	0.00000000
20	0.00000121	-0.00000006	-0.00000017	0.00000003	0.00000003	0.00000000	-0.00000001	0.00000000	0.00000000
21	0.00001204	0.00000082	-0.00000233	0.00000000	0.00000044	0.00000000	-0.00000006	0.00000000	0.00000002